Changes and Clarifications For Lowlands of Western WA

February 2001

This document contains changes and clarifications to the "Methods for Assessing Wetland Functions Riverine and Depressional Wetlands in the Lowlands of Western Washington: Parts 1 and 2" that have been identified since the methods were released in August of 1999.

It is divided into the following sections:

- General changes or corrections
- Additions and corrections to specific pages in Part 1 of the methods
- Additions and corrections to specific pages in Part 2 of the methods
- Changes and clarifications to size thresholds
- Corrections or changes to data forms
- Clarifications by data
- Table listing size thresholds for specific data
- Replacement Pages
- New appendix – Appendix P

Changes and clarifications include only those which are substantive and affect how the methods should be used. Editorial changes have not been included.

We are providing replacements for selected pages. Otherwise, use this document to pencil in the changes and clarifications in your copy of the methods.

There are two page numbers listed for additions and corrections to specific pages. The top one applies to Part 1 of the final methods. The bottom one, in parenthesis, corresponds to the version distributed during the five-day training that took place on July 12-16, 1999. The content for the training draft is essentially the same even though the page numbering is different. The page numbers for Part 2 are the same for both iterations.

Changes or Corrections

General Changes or Corrections

Thank You EPA - We failed to acknowledge and thank the US Environmental Protection Agency for providing funding for the project through a number of grants. Without their support, the methods would not have been developed. Please replace the current acknowledgements page with a new one provided in the back of this document.

Acre or Hectare Points – Delete reference to using hectare points. Substitute page 16 in Part 1 of both the training and final methods with the replacement page at the back of the document. We no longer recommend that hectare points be used as a performance score to quantify impacts.

Changes and clarifications should be used immediately!

The August 1999 methods state that you can multiply each index of potential or suitability by the acre of impact, or size of the wetland, and compare the impact of alterations in two different wetlands. At present, however, we do not have enough information to support such comparisons. Based on our initial field tests of the method, we do not think that it is appropriate to say that the level of function of 10 hectares (ha) of a wetland with a low score (e.g. score = 3) is equivalent to three ha of a wetland that scores high (score = 10). [10 ha x (index of 3) = 30 ha points is not the same level of function as 3 ha x (index = 10) = 30 ha points].

Classification of Wetlands – Change the terms coastal and estuarine to tidal wherever they appear in the document. These terms are used interchangeably in the documents. Tidal wetlands are those that experience salt or freshwater tidal surges.

Terms Describing Surface Water – Some users have found the terms used to describe the presence of surface water (inundation) in a wetland confusing. The changes below are an attempt to create new terms that will be clearer.

Surface Water - The term open water was used in several different ways that were not consistent. The concept of surface water in a wetland has been broken down into several different categories as described below. The term "open water," whether permanent or not, has been changed to reflect the presence or absence of floating and/or emergent vegetation. Therefore, "open water" is now characterized as "open inundation," "exposed inundation," or "inundation." For example, what was called "permanent open water" is now either "permanent open inundation" (POI), "permanent exposed inundation" (PEI), or "permanent inundation" (PI). Areas of inundation characterized with the adjective "permanent" must be inundated for the entire year for most years.

"***Open inundation***" is used to describe areas where surface water is present but that do not have vegetation on or above the surface of the water. Areas of open inundation can, however, have submerged vegetation attached to the bottom.

Permanent open inundation is an area with surface water present throughout the year that does not have vegetation on or above the surface.

"***Exposed inundation***" is used to describe areas where surface water is present, but that do not have erect and persistent vegetation above the surface. This descriptor is more inclusive than "open inundation." Areas of exposed inundation can have floating vegetation as well as unvegetated areas and/or submerged vegetation. These areas do not have vegetation that emerges above the surface of the water such as emergent, shrub or forest vegetation. Late in the season, some aquatic plants such as Nuphar may extend above the surface of the water when water levels drop. Such areas would still be considered as exposed inundation. Areas of inundation characterized with the adjective "permanent" must be inundated for the entire year for most years.

Permanent exposed inundation is used to describe areas of permanent surface water that do not have erect and persistent vegetation.

"***Inundation***" is used to describe any areas where surface water is present. It can include areas that have vegetation that emerges above the surface of the water as well as open, submerged, or floating vegetation. This descriptor is, therefore, the more inclusive than open or exposed inundation.

Permanent inundation is used to describe any areas with permanent surface water.

Also note that the abbreviation for permanent open water (POW) should be deleted. Using POW is confusing because it is also used as a convention on National Wetland Inventory maps indicating the presence of open water in the palustrine class.

See the list for "Additions and Correction to Specific Pages" and "Corrections or Changes to Data Forms" for places where these terms should be changed in the methods.

Annual and Seasonal Inundation – The term **"annual inundation"** is used to represent the area of the assessment unit (AU) that is inundated with surface water for <u>at least</u> 1 month in a year. It includes <u>both</u> the areas permanently inundated and those that are only inundated for part of the year. Areas inundated for only part of the year, but more than 1 month, are called **"seasonally inundated**." When estimating areas of inundation make sure that "area of permanent inundation + area of seasonal inundation = area of annual inundation."

Standing water – The term "standing water" is still used in a few places. The term "standing water" can be seasonal or permanent and can be vegetated or non-vegetated.

Flooded – The term "flooded" is being deleted to reduce confusion between overbank flooding,required for riverine wetlands, and flooding from other sources such as runoff or groundwater. It is replaced by the term "inundated" or "surface inundation."

Additions and Corrections to Specific Pages in Part 1

Many of the following changes result from the changes to the terms described above. Most of the changes to the calculation pages are typographical errors in the text. The spreadsheets do not contain these errors.

Page 51 *(Pg. 48)* <u>Model at a Glance</u> – Veffectarea1 - change "seasonally inundated" to "annually inundated."

Page 53 *(Pg. 50)* <u>Indicators</u> at top of page – change "seasonal basis" to "annual basis."

<u>Scaling</u> at top of page – change "seasonally inundated" to annually inundated in the first and second line.

Page 55 *(Pg. 52)* <u>Calculations of Potential Performance</u> – Veffectacrea1

Highest: change "seasonally" to "annually."
Lowest: change "seasonally" to "annually" and delete "ponded."

Page 58 *(Pg. 55)* — Model at a Glance – Veffectarea2 – change "permanent open water" to "permanent exposed inundation."

Page 59 *(Pg. 56)* — Scaling at top of page – change "permanent open water" to permanent exposed inundation."

Page 66 *(Pg. 62)* — First line, change "seasonal basis" to "annual basis."

Page 67 *(Page 63)* — Calculations of Potential Performance – Veffectarea 1

Highest: change "seasonally ponded or inundated" to "annually inundated."
Lowest: change "seasonally ponded" to "annually inundated."

Page 72 *(Pg. 68)* — Vinund/shed – change "seasonally ponded or inundated" to "annually inundated" in the definition, rationale (second paragraph, third line) and scaling (first line.)

Page 73 *(Pg. 69)* — Calculations of Potential – Vinund/shed

Highest: change "seasonally inundated" to annually inundated"
Lowest: change "seasonally inundated" to annually inundated"

Page 78 *(Pg. 74)* — Vinund/shed – change "seasonally ponded or inundated" to "annually inundated" in the definition and rationale (second paragraph.)

Page 79 *(Pg. 75)* — Calculation of Potential Performance – Vinund/shed

Lowest: change "seasonally inundated" to "annually inundated."

Page 82 *(Pg. 78)* — Model at a Glance – Vefectarea2 – Leave "seasonal inundation" and delete "minus permanent open water."

Description – Veffectarea2 – Replace the second sentence with the following: "The variable is measured as the percent of the AU that is seasonally inundated. It is calculated as the percent of annual inundation minus the area that has permanent exposed inundation."

Page 83 *(Pg. 79)* — Indicators - change "seasonally inundated" to "annually inundated."

Page 84 *(Pg. 80)* — Calculations of Potential Performance – Veffectarea2

Highest: change "permanent open water" to "permanent exposed inundation."
Lowest: change "ponded" to "inundated"

Page 90 *(Pg. 86)* — Vlwd – change "permanent open water" to "permanent exposed inundation" in the definition (second line) and under scaling (first line).

Page 91 *(Pg. 87)* — Indicators - Delete the term "flooded" in "permanently flooded or inundated," "seasonally flooded or inundated," and "occasionally flooded or inundated."

Page 92 *(Pg. 88)* Vwintersp - change "permanent open water" to "permanent exposed inundation" in the definition (first line) and scaling (line three.)

Page 101 *(Pg. 97)* Vwintersp - change "permanent open water" to "permanent exposed inundation" in the definition (first line) and scaling (line three.)

Vlwd - change "permanent open water" to "permanent exposed inundation" in the definition (second line) and under scaling (first line).

Page 103 *(Pg. 99)* Vhydrop – in the indicators, change "permanently flooded, seasonally flooded and occasionally flooded" to "permanently inundated, seasonally inundated and occasionally inundated."

Page 108 *(Pg. 104)* Model at a Glance – for Vwater, change "permanent water" to "permanent inundation."

Page 109 *(Pg. 105)* Vwintersp- change "permanent open water" to "permanent exposed inundation" in the definition (first line), in rationale (lines seven and eight) and scaling (line three.)

Pg. 110 & 111 (*Pg. 106 & 107)* Vlwd – change "permanent open water" to to "permanent exposed inundation" in the definition (second line) and under scaling (first line).

Vwater – change description of variable to "The percent of the AU with permanent exposed inundation.

In the scaling of the variable change all descriptors as follows:

Highest – AU has at least 50% permanently exposed inundation
High – Au has 10 – 49% permanently exposed inundation
Moderate – AU has no exposed inundation but has permanent inundation in areas with emergent, shrub, or forest vegetation.
Low – AU has 1 – 9% permanently exposed inundation
Lowest – AU has no permanent inundation

Page 113 *(Pg. 109)* Calculation of Habitat Suitability – under Vwater, copy the scaling descriptors listed above into the table.

Page 114 *(Pg. 110)* Calculation of Habitat Suitability (Replacement page provided at the back of the document.)

Vphow - pH of standing water >5.5 – change "0.8" to "1.0"

Page 116 *(Pg. 112)* Second paragraph on page – in the second line, change "permanent water" to "permanent inundation" and in the fifth line, change "permanent open water" to "permanent inundation."

Page 151 *(Pg. 147)* Third paragraph (fifth line) - change "seasonally inundated" to "annually inundated."

Page 152 *(Pg. 148)* Model at a Glance – Veffectarea1 – change "seasonally inundated" to "annually inundated."

Page 153 *(Pg. 149)* Veffectarea1 - change "seasonally inundated" to "annually inundated" in the definition (first line), indicators (second line), and scaling (first and second line).

Page 155 *(Pg. 151)* Calculation of Potential Performance – (Replacement page provided.)

In: Description of Scaling for Veffectarea1:

Highest: change "seasonally inundated" to "annually inundated."
Lowest: change "seasonally inundated" to "annually inundated."
Calculation: change "AU inundated" to "AU annually inundated."

In: Index for Primary Production and Export – change "*x 2.22*" to "*x 2.06*."

Page 167 *(Pg. 163)* Veffectarea1 – under scaling, change "seasonally inundated" to "annually inundated" (first and second lines). (Replacement page provided.)

Page 168 *(Pg. 164)* Calculations of Potential Performance (Replacement page provided.)

In: Description of Scaling for Veffectarea1:

Highest: change "seasonally inundated" to "annually inundated."
Lowest: change "seasonally inundated" to "annually inundated."

In: Index for Removing Metals and Toxic Organics – change "x 2.23" to "x 3.23"

Page 175 *(Pg. 171)* Model at a Glance – Veffectarea2 – Leave "seasonal inundation" and delete "minus permanent open inundation."

Description – Veffectarea2 – Replace the second sentence with the following: "The variable is measured as the percent of the AU that is seasonally inundated. It is calculated as the percent of annual inundation minus the area that has permanent exposed inundation."

Indicators - change "seasonally inundated" to "annually inundated."

Page 176 *(Pg. 172)* Calculations of Potential Performance –

In: Description of Scaling for Veffectarea2

Highest: delete "ponded" and change "permanent open water " to "permanent exposed inundation"
Lowest: change "ponded" to "inundated."

Page 205 *(Pg. 200)* Calculation of Habitat Suitability – Reducer – Score for Variable (Replacement page provided.)

Vphow – pH of standing water >= 5.5 – change "0.8" to "1."

Page 214 *(Pg. 210)* First paragraph, at the top of the page, forth line, delete the sentence "The index for the fish habitat function is added as a variable to reflect the importance fish have in the diet of otters and, to a lesser degree, mink." There is no fish model for depressional closed. (Replacement page provided.)

Page 219 *(Pg. 215)* Calculation of Habitat Suitability (Replacement page provided.)

Vemergent2

Highest: change "2.5 acres" to "1 acre."

Vwintersp2

Highest: change "2.5 acres" to "1 acre."

Page 265 *(Pg. 261)* Calculation of Habitat Suitability – (Replacement page provided.)

In: Vhydrop - Highest: change "w or 4" to "3 or 4."

Page 282 *(Pg. 278)* Under Description and Scaling of Variables - Vflowmods

Scaling: change "[1]" to "[2]."

Page 290 *(Pg. 286)* Calculation of Habitat Suitability – (Replacement page provided.)

Index for Habitat Suitability for Resident Fish - change "x 2.00" to "x 1.75."

Page 308 *(Pg. 304)* Calculation of Habitat Suitability –(Replacement page provided.)

In: Vassemb - Highest: change "10" to "9."
Calculation: change '10" to "9."

Change "Calculate D20/10 to get result" to "Calculate D20/9 to get result."

Page 316 *(Pg. 312)* Model at a Glance – Veffectarea1 – change "seasonally inundated" to "annually inundated."

Page 318 *(Pg. 314)* Veffectarea1 – change "seasonal" and "seasonally" to "an annual" and "annually" under indicators (forth line) and under scaling (first and second line).

Page 320 *(Pg. 316)* Calculations of Potential Performance (Replacement page provided.)

Vstorage

In: Score for Variable, top box in column, change >=2.1 to >=1.0

Calculation, change "Scaling is set as average depth/1" to "Scaling is set as storage/2.1."

and change "4. Result = storage /1" to "4. Result = storage/2.1."

Veffectarea1

Highest: change "seasonally" to "annually."
Lowest: change "seasonally" to "annually."

Page 323 *(Pg. 319)* Model at a Glance – Veffectarea2 – change measures to "area of seasonal inundation"

Page 324 *(Pg. 320)* Veffectarea2 - indicators 2d line only: change "seasonally" to "annually."

Page 329 *(Pg. 325)* Model at a Glance – Veffectarea1 - change "seasonally inundated" to "annually inundated."

Page 330 *(Pg. 326)* Veffectarea1 – change "seasonal" and "seasonally" to "an annual" and "annually" under Indicators (forth line) and under Scaling (first and second line).

Page 331 *(Pg. 327)* Calculation of Potential Performance – Veffectarea1

Highest: change "seasonally" to "annually."
Lowest: change "seasonally" to "annually."

Page 335 *(Pg. 331)* Second paragraph, line two. Delete the sentence starting with "The relative index…"

Page 336 *(Pg. 332)* Vinund/shed change "seasonally ponded or inundated" to "annually inundated" in the definition (first line) and "seasonal" to "annual" in the Scaling (first line)

Page 337 *(Pg. 333)* Calculations of Potential Performance – Vinund/shed (Replacement page provided.)

Highest: change "seasonally inundated" to "annually inundated."
Lowest: change "seasonally inundated" to "annually inundated."

Index for Reducing Peak Flows – change *"x 5.0"* to *"x 4.7"*

Page 342 *(Pg. 338)* Vinund/shed – change "seasonally ponded or inundated" to "annually inundated" in the definition (first line) and "seasonal" to "annual" in the Scaling (first line)

Page 343 *(Pg. 339)* Calculation of Potential Performance – Vinund/shed (Replacement page provided.)

Lowest: change "seasonally inundated" to "annually inundated."

Index for Decreasing Downstream Erosion – change *"x 3.33"* to ***"x 3.0."***

Page 346 (*Pg. 342*) Model at a Glance – Veffectarea2 – change "Measures" to "area of seasonal."

Veffectarea2 (text) – change "seasonally inundated" to "annually inundated."

Page 347 (*Pg. 343*) Under Indicators, change "seasonally inundated" to "annually inundated."

Page 348 *(Pg. 344)* Calculations of Potential Performance – Veffectarea2 delete "ponded" and change "open water" to "open inundation".

Page 363 *(Pg. 359)* Vsubstrate – under Rationale, delete the last line starting with "Moreover, those with organic matter…"

Page 383 *(Pg. 379)* Calculation of Habitat Suitability – Vcover (Replacement page provided.)

Highest: change "AU scored 1 for overhanging veg. And has 6 or more…" to "AU has overhanging vegetation, undercut banks, and has 6 or more…"

In the last row, change "If D45 <4 calculate D32 + D34 + (D45/6) to get result; if D45 > 6 calculate D32 + D34 + 1 to get result"

to: "If D45 <6 calculate (D32 + D34 + (D45/6)) x 0.66 to get result; if D45 > 6 calculate 0.66 x (D32 + D34 + 1)/3 to get result."

Page 388 *(Pg. 384)* Vsubstrate – under Scaling, line 3, change "4 or more" to "5 or more" and change "of the 5 types of substrate" to "of the 8 types of substrate", and finally on line four, change "(# of types/4)" to "(# of types/5)." (Replacement page provided.)

Page 389 (*Pg. 385*) Calculation of Habitat Suitability (Replacement page provided.)

Vcover

Calculation: change "1 for overhang, and 3 for LWD normalized to 4" to "1 for overhang, 2 for banks, and 3 for LWD normalized to 6."

Vsubstrate

Highest: change "at least 4 types of substrate" to "at least **5** types of substrate."

Calculation: change "and organic substrate types/4" to "and organic substrate types/**5**"

Change "calculate [sum (D46.1 – D46.5)]/4" to ""calculate [sum (D46.1 – D46.5)]/5"

Page 412 *(Page 408)* Third paragraph – fifth line. Change "seasonally inundated" to "annually inundated."

Page 415 (*Pg. 411*) Calculation of Potential Performance – Reducer (Replacement page provided.)

Vbogs – delete the entire section on bogs as a reducer.

Index for Primary Production and Export – delete "x Reducer"

Additions and Corrections to Specific Pages in Part 2

Page 14 — We no longer recommend dividing an AU into subunits. Remove this page and use the replacement page provided. (Replacement page provided.)

Page 15 — In the last paragraph, replace "percent cover" with "percent area." (Replacement page provided.)

Page 16 — Add "Visual estimates, however, should not be used to estimate percent area covered by a feature" to the second paragraph under "Areal Estimate vs. % Cover. (Replacement page provided.)

Page 21 — For the presence of a channel to count in D4, the channel must be at least 10m (30 feet) long within the boundaries of the AU. Add this to the description for channel. (Replacement page provided.)

Page 22 — The text describing D4.3 should include the presence of a vertical siphon as well as a culvert smaller than 60 cm (2 ft). (Replacement page provided.)

Page 23 — Note 3 at the top of the page should say "the channel in D5 and D7 is the same as the one in D4."

Page 23 — The text describing D8.1, percent that is annually inundated is missing a definition of annual inundation. The area that is annually inundated includes both the areas permanently inundated and those that are only inundated for part of the year for at least one month. Areas inundated for only part of the year, but more than 1 month, are called "seasonally inundated." Areas that are only occasionally inundated (for less than one month) are noted in datum D9, but not included in any areal estimates under datum D8, D10, or D12. When estimating areas of inundation make sure that: area of permanent inundation + area of seasonal inundation = area of annual inundation.

Page 24 — Note 2, change the term "seasonal" to "annual."

Page 24 — For D8.2, change percent of AU with "permanent standing water" to "permanent inundation."

Page 24 — For D8.3, change percent of AU with "permanent open water" to "permanent open inundation."

Page 25 — The term "permanent open water" is used in several places on this page. Replace them all with "permanent open inundation."

Page 25 — Delete the box at the top of the page. The size threshold is being deleted to be consistent with lack of threshold for the other inundation regimes. (Replacement page provided.)

Page 25 — In Note 1 and 3, add "non-persistent aquatic species" as a description for "aquatic bed." (Replacement page provided.)

Page 26 For D9, delete the term "flooded" from the inundation/saturation categories "permanently flooded or inundated," "seasonally flooded or inundated," and occasionally flooded or inundated." "Flooded" is being deleted to reduce confusion between over-bank flooding, required for riverine wetlands, and flooding from other sources such as runoff or groundwater. (Replacement page provided.)

Page 26 In the first paragraph under D9, types of inundation/saturation categories, delete the reference to hydroperiods used in the National Wetland Inventory's classification. We have changed the names and definitions of the hydroperiods enough that the reference is no longer appropriate.

Page 26 The description for seasonally inundated at the bottom of the page (D9.2) should say "greater than 1 month" instead of "1 month."

Page 27 Delete the note for D9.6. (Replacement page provided.)

Page 27 Change the term "height" of flooding to "depth" of inundation in the title for D10 and in Note 5. (Replacement page provided.)

Page 28 For D12, Replace first sentence with: "Identify all the categories of surface water depths listed below that are present in the areas annually inundated in the AU." (Replacement page provided.)

Page 32 For D18, text should state that there has to be 75 percent canopy closure of overhanging trees or shrubs. This means the canopy occupies more than 75 percent of the width of the stream at that point. Although 75 percent canopy closure is part of the title, repeat this in the text to clarify. The shrubs should be at least 1 meter (3.3 feet) high to count for canopy closure. (Replacement page provided.)

Page 34 For "number of vegetation strata present," change the title for "herbaceous" stratum to "herbaceous/short woody" stratum. The description for this stratum should read "non-woody vegetation, usually less than 2 m tall (except Typha spp. And Phragmites spp. which may exceed the height limit) and woody vegetation less than 2 m tall (eg. Kalmia ssp.)"

Page 37 For D25, replace "open water" with "permanent exposed inundation."

Page 37 For D26.2, delete the term "open water."

Page 39 The chart on log decomposition classes applies to logs not snags (D31). It belongs on page 46 and relates to the categories of large woody debris on the AU surface (D44) and in permanent inundation (D45). (Replacement page provided.)

For D31.1, a decomposed stump greater than 30 cm (12 inches) can qualify as "snags larger than 30 cm.

Page 40 For D32, overhanging vegetation, replace "permanent open water" with "permanent exposed inundation." (Replacement page provided.)

Page 40 For D33, in the box, change "open water" to "exposed inundation." (Replacement page provided.)

Page 41 "For egg-laying structures for amphibians," delete the box at the top of the page. Use thresholds in the key on the data form. (Replacement page provided.)

Page 41 For D35, egg-laying structures, change "exposed water" to "exposed inundation" and "open water" to "exposed inundation." (Replacement page provided.)

Page 42 For D38, replace title with "Interspersion between persistent vegetation and exposed inundation," and the first line with "If the AU has a "permanent open inundation" water regime or "aquatic bed….." (Replacement page provided.)

Page 43 For D41, change the first sentence of the second paragraph to read: "Observe the different heights of vegetation structure on each side of the AU boundary." Don't use Cowardin vegetation classes when determining the height differences in D41 because it doesn't include a moss and ground cover as a type of structure.

Also add: "**NOTE 3:** Edges of the AU that are bounded by open inundation on one side should be treated as if there is no difference in vegetation structure." (Replacement page provided.)

Page 45 For D44, large woody debris on AU surface, change outside area of "permanent open water" to "permanent inundation." (Replacement page provided.)

Page 46 For D45, large woody debris "in permanent open water," change "permanent open water" to "permanent inundation." (Replacement page provided.)

Page 46 There is a minimum size threshold for categories of surface composition to be counted. Within these areas, for each category, at least 50% of the surface must be covered with that composition type. Add this threshold to the text. (Replacement page provided.)

Page 47 Add a new soils check off table that makes it easier to determine the extent of different soil types in the A horizon. The new form, labeled "Appendix P," is provided at the back of the document.

Page 47 For D47, first line, look at the top 15 cm for soils in the A horizon, not the top 10-15 cm.

Page 48 Change Note 1 to "Always dig the hole to a depth of 60 cm (24 in), examining the top 15 cm for D47 and the soil at 60 cm for D48." (Replacement page provided.)

Page 48 Change text in box at the top of the page to read : "To collect data for both D47 and D48, locate all of your sampling points in the areas that are annually inundated for depressional AUs, or in the interior of a riverine AU where the frequent flooding occurs." (Replacement page provided.)

Page 48 Delete Note 3 at the top of the page and replace with the following. "**NOTE 3:** Record the percentage of each soil type only as a percent of the area inundated annually. For example, the AU has only 20% of its total area inundated annually, but all the soils within this area are

mineral, the correct number to record is a [3] (100% of the area is mineral soil)." (Replacement page provided.)

Page 63 Change the title for Figure 5 to "AU contained within dikes." The figure is an illustration that helps when answering D4.2 on the Riverine Flow-through data form.

Changes and Clarifications to Size Thresholds

A number of changes and clarifications have been made regarding the size thresholds that need to be met for particular data. We have created a chart that lists all including any new/changed thresholds.

We have been asked to clarify when small patches of a particular feature can be added together to meet the minimum size threshold. Guidance regarding this issue is also provided in the chart. In general, however, a maximum of ten small patches can be combined when it is allowable to combine patches to meet the size threshold. The chart clarifying size thresholds is attached to this document.

Corrections or Changes to Data Forms

D0 Change 1/0 to 0/1.

D4.2 On Riverine Flow-through data form, add a 0/1 and a line to enter your response.

D8.2 Change percent of AU with "permanent standing" to "permanent inundation."

D8.3 Change percent of AU with "permanent open water" to "permanent open inundation."

D8.5 Add term "larger contiguous" to beginning of the datum – "Larger contiguours unvegetated bars…."

D9 In D9.1-9.3 replace the term "flooded" with "inundated" for D9.1-9.3.

D12 Delete "flooded" from "inundated/flooded."

D12 Add the clarification " not areas occasionally inundated" to the data form.
Delete "flooded" from "inundatd/flooded."

D21 Change "in any plant assemblage" to "in a particular assemblage."

~~D25 Replace "open water" with "permanent exposed inundation."~~

D25 Replace "aquatic bed" with non-persistent vegetation

D26.2 Delete the term "open." Standing includes all types of water for it can be vegetated or not vegetated.

D29 Change the text "Open field: AU is within 5 km (3 mi) of an open field (agriculture or pasture) >16 ha (40 acres)" to "Large field or pasture: AU is within 5 km (3mi) of a large field or pasture > 16 ha (40 acres)."

D32 Change "open water" to "exposed inundation."

D33 Change “open water” to “exposed inundation.”

D35 Change “open water” to “exposed inundation.”

~~D35 Change “open water” to “exposed water.”~~

D35 In key for rating egg-laying structures, delete the words “no more than a” from step 3 and step 6. Also in steps 3 and 6, replace "open water" with "exposed inundation."

D35 Change the word “emergent” to “erect” in the key for rating egg-laying structures for amphibians.

D38 Change the word “erect” to “persistent.”

D38 Replace “permanent open water” with “permanent exposed inundation” and delete “(POW + AB)."

D44 Change outside of “permanent open water” to “permanent inundation.”

D45 Change “permanent water” to “permanent inundation.”

D46 Delete “broad-leaved.”

D46 Note on the data form that within 10 square meter areas for each category, at least 50% of each area must be covered in that surface composition.

D47 Soil box goes with D48 not D47.

D47 The percents used to answer D47 should be the percent of the area of annual inundation *not* the percent of the entire AU. Change “[1] if 1-49% area of AU, [2] if 50% to 95%, [3] if >95%” to “[1] if 1-49% of area annual inundation, [2] if 50% to 95% or area of annual inundation, [3] if >95% of area of annual inundation.”

A new form for this datum has been developed to assist with recording the datum. It is applicable to D47 on the Depressional Outflow/Riverine Impounding data forms and the Depressional Closed forms. If you use the new form, you will record the correct scores on the data form. The new form, labeled “Appendix P,” is provided at the back of the document.

NOTE: There is no place to record logs “inside permanent water” on the single page provided to quickly record snags and logs as they are observed in the field. You can divide the column for logs outside permanent water into two and label one outside permanent inundation and one inside permanent inundation.

General Clarifications by Data

D3 For land uses within 1 km of the AU, ball fields should be placed in the category “agriculture.”

D12 Do not consider areas that are “occasionally inundated,” as described in D9, when collecting data on water depths.

D16 The understory under forest or scrub/shrub areas has to be rooted in the AU.

D20 Co-dominance in a plant assemblage (20%-50%) can be based on the cover of the plant in any stratum.

D26.2 Standing water can be seasonal or permanent and can be vegetated or non-vegetated.

D35 For egg laying structures for amphibians, "thin-stemmed" vegetation includes the stems of herbaceous plants as well as thin twigs. The herbaceous plants should be those that grow in an erect form, and don't have to be "emergent." The vegetation or twigs must occur in areas that are annually inundated.

D42 When rating the buffer of the AU, you can add patches of the edge together to meet the 50% requirement. The 50% does not have to be continuous. **Follow the rule for adding patches for size threshold; a maximum of 10 patches can be added together to meet the requirement.**

D42 Recent chemical applications of herbicides can be considered a disturbance to the buffer of the AU.

D44/45 Category 1 includes downed logs that have not begun to decay yet. Woody debris consisting of small logs jammed into a mass does not count.

D46 Gravels and cobbles can be rounded, angular or irregular. Gravels ranges from .2 – 7.6 cm diameter and includes fine, medium and coarse gravels. Cobbles ranges from 7.6 – 25 cm in diameter.

Size Thresholds for Data

The following is a list of all the size thresholds required in the methods. It also indicates that small, noncontiguous patches can be combined to meet the size thresholds. Minimum thresholds for percent cover are not included.

NOTE: A maximum of ten small patches can be combined when it is allowable to combine patches to meet the size threshold. An * indicates that the size threshold was not in the previous guidance.

Data by Number	Size Threshold	Can Small, Noncontiguous Patches Be Combined to Meet the Size Threshold?
***D4* Channel within AU**	10 meters (33 feet) in length*	No
***D8.5* Larger Unvegetated Bars or Mudflats**	Unvegetated bars or mudflats must be at least 100m^2 in size	No
***D9* Types of Inundation Categories**	For AUs equal to or greater than 1.0 ha (2.5 ac), you need a minimum of 0.1 ha (0.25 ac) of the total AU for this datum. For AUs less than 1.0 ha, the threshold is 10% of the AU.	Yes
***D12* Water Depths**	AUs equal to or greater than 1.0 ha (2.5 ac), you need a minimum of 0.1 ha of the total AU present for at least 1 month. AUs less than 1.0 ha, the threshold is 10% of the AU.	Yes
***D14* Cowardin Vegetation Classes**	For AUs equal to or greater than 1.0 ha (2.5 ac), you need a minimum of 0.1 ha (0.25 ac) of the total AU for this datum. AUs less than 1.0 ha, the threshold is 10% of the AU.	Yes
***D20* Plant Assemblages**	For AUs equal to or greater than 1.0 ha (2.5 ac), you need a minimum of 0.1 ha (0.25 ac) of the total AU for this datum. AUs less than 1.0 ha, the threshold is 10% of the AU.	Yes

***D22* Mature Trees**	Western Hemlock - greater than 45 cm (18 in) Western Red Cedar - greater than 45 cm (18 in) Douglas Fir - greater than 45 cm (18 in) Sitka Spruce - greater than 45 cm (18 in) Black Cottonwood - greater than 45 cm (18 in) Big-leaf Maple - greater than 45 cm (18 in) Red Alder - greater than 30 cm (12 in) Oregon Ash - greater than 30 cm (12 in) Lodgepole Pine - greater than 30 cm (12 in) Pacific Willow - greater than 30 cm (12 in)	No
***D30* Woody Browse**	For AUs equal to or greater than 1.0 ha (2.5 ac), you need a minimum of 0.1 ha (0.25 ac) of the total AU for this datum. For AUs less than 1.0 ha, the threshold is 10% of the AU.	Yes
***D31* Decomposition Stages**	Snags and stumps can be counted only if their DBH is at least 10 cm (4in.) or 10 cm at the base for decayed stumps. There is no height threshold.	NA
***D32* Overhanging Vegetation**	Overhang has to extend 1 m (3.3 ft) from the edge and 10m (33 ft) along the edge of the area with permanent exposed inundation or the stream.	No
***D33* Upland Islands**	Upland islands must be larger than 10 m^2 (1000 ft2) and they need to be surrounded by at least 30 m (100 ft) of exposed inundation deeper than 1 m (3.3 ft)**.**	No
***D33.1* Snags Greater than 30 cm DBH**	Snags must have a DBH greater than 30 cm (12 in).	No
***D34* Undercut Banks**	Area of undercutting must extend at least 2 m (6.6 ft).	No
***D35* Egg Laying Structures**	Refer to the key on the data form. For AUs equal to or greater than 1.0 ha (2.5 ac), you need a minimum of 0.1 ha (0.25 ac) of the total AU of thin-stemmed vegetation or thin branches (less than 8 mm [5/16 inch) in permanently or seasonally exposed,	No

	inundated areas. For AUs less than 1.0 ha, the threshold is 10% of the AU with thin stems.	
D36 Tannins	Waters with high tannin content must extend over at least 10% of the areas of standing water.	Yes
D37 **Steep Banks**	A bank must be greater than 30 degrees steep, greater than 10 m (33 ft) long, more than 0.6 m (2 ft) high, and consist of fine material.	No
D43 **Corridors From AU**	Refer to key on data form. Any vegetated corridor must be a minimum of 5 m in width.	No
D44 **Large Woody Debris on Surface**	Logs must be at least 2 m (6.6 ft) long with a minimum of 10 cm (4 in) diameter at the widest part.	N/A
D45 **Large Woody Debris in Permanent Inundation**	Logs must be at least 2 m (6.6 ft) long with a minimum of 10 cm (4 in) diameter at the widest part.	N/A
D46 **Composition of the Surface**	Patches of any category must be at least 10 square meters to be counted.	No
D49.1 and 49.2 **Substrate of Permanently Flowing Stream**	There must be at least 1 m (3.3 ft) of the streambed, in the direction of flow, with these substrates.	No